

## WHAT IS CLAIMED IS

1. An electrical apparatus for powering a load, said electrical apparatus comprising:

a source of pulsating direct voltage;

a first plurality of power factor correcting AC-to-DC switching converters units, each including first and second input ports coupled to said source of pulsating direct voltage, and each also including first and second output ports, each of said power factor correcting AC-to-DC switching converter units being for converting said pulsating direct voltage into a direct voltage at said first and second output terminals, and for tending to maintain the current through said source of pulsating direct voltage in-phase with said pulsating direct voltage, each of said power factor correcting AC-to-DC switching converter units further including first unidirectional current conducting means associated with said first output port for resisting retrograde flow of current at said first output port;

a plurality equal to said first plurality of current sharing controllers, each of which includes an input terminal coupled to said first output terminal of one of said power factor correcting AC-to-DC switching converter units, a reference port in common with all said current sharing controllers, and an output port in common with all output ports of said current sharing controllers; and

an output return current equalizing impedance

associated with said second output terminal of each of said power factor correcting AC-to-DC switching converter units, said equalizing impedance comprising second unidirectional current conducting means poled for resisting forward flow of current at the associated first output port.

2. An apparatus according to claim 1, wherein said power factor correcting AC-to-DC switching converter units are boost power factor correcting AC-to-DC switching converter units.

3. An apparatus according to claim 1, wherein each of said output return current equalizing impedances comprises resistance means.

4. An apparatus according to claim 1, further comprising a controllable path coupled to said source of pulsating direct voltage and to said load, for tending to charge a capacitive component of said load at turn-on, said controllable path ceasing said charge after turn-on.

5. An apparatus according to claim 4, wherein said controllable path includes a controllable switch.

6. An apparatus according to claim 5, wherein said controllable switch includes a unidirectional current conducting device which conducts when said pulsating direct

voltage is greater than the voltage on said capacitive component and which ceases conduction when said pulsating direct voltage is less than said voltage on said capacitive component.

7. An apparatus according to claim 6, wherein said power factor correction units are voltage-boosting units which produce a direct voltage greater than the peak value of said pulsating direct voltage.

8. An apparatus according to claim 1, further comprising a saturable reactor coupled to said load and to said output port in common with all output ports of said current sharing controllers, for tending to present a high impedance to changes in load current during turn-on.